

Installation Instructions for High Altitude Compensating Device Espar Kit # 20.2900.70.0007

For extended use at high altitudes, all heaters with “H-Kit” on the label should be paired with JE High Altitude sensor P/N: 22 1000 33 22 00.

The Espar High Altitude Compensating Device is used in conjunction with the most Espar heaters using a fuel pump in 12 or 24 volts. This includes *Airtronic 2/4/5* (in gasoline or diesel version) D8LC, Hydronic 4/5 (in gasoline or diesel versions) and Hydronic 10 models.

Hydronic M-II series 8/10/12 kW heaters can be used with Compensator only if external resistor (10-12 Ohms for 12V heater) substituting fuel pump is installed between ground wire and pump wire on the heater.

The device automatically adjusts the fuel pump rate in relation to increasing altitude. As the altitude increases the fuel pump rate decreases. The High Altitude Compensator adjusts fuel pump rate at all altitudes beginning at sea level.

NOTE: The High Altitude Compensator MUST BE KEPT DRY.

The High Altitude Compensator is open to the atmosphere to read atmospheric pressure. It MUST be installed in a well protected dry environment. In the case of the *Airtronic D2/4*, it can be mounted in the vicinity of the heater.

In the case of coolant heaters the Compensator can be mounted in the heater box, well protected from any water or debris.

The Compensator comes with two connectors installed onto its harness.

1- 8 pin Female connector Block:

Plugs into Diagnostic Pigtail of *Airtronic D2/4/5* harness, (when available)

2- 4 pin Female connector block:

Must be integrated into fuel metering pump circuit. (See instruction below)

Included in the Universal High Altitude Kit:

- 1- High Altitude Compensator: 20.2900.70.0009 or 20.2900.70.0006
- 4- Pin Male Junior connector: 206 31 296
- 8- Pin Male Junior Connector: 206 31 298
- 7- Female Junior terminals: 206 00 180

Installation:

Find a suitable mounting location for the High Altitude Compensator. The device is NOT position sensitive. It must be installed in such a location that its harness can connect with the heater's diagnostic pigtail (*Airtronic 2/4/5*). The High Altitude Compensator must be kept dry and if possible clean. The device monitors barometric pressure. Keep clean so opening does not get blocked.

The 8 PIN BLOCK FROM ALTITUDE COMPENSATOR will plug directly into the diagnostic pigtail on the heater harness. The wire colors Red, Yellow and Brown must line up with each other. Ignore the other wires. If the diagnostic pigtail is not available please follow the wiring instructions on the sheet provided for required power and signal inputs. The Altitude Compensator requires battery power, ground and enable signal from the harness "Yellow Wire", as well.

Fuel pump harness interface:

- 1- Espar fuel pumps are dosing or impulse pumps. The control unit sends out short pulses or bursts of electricity for every impulse or "pump" of fuel. The electrical burst comes from the control unit to one terminal of the pump. The other terminal on the fmp is connected directly to ground.
- 2- Use an Ohm meter to find the Ground lead on the fmp.
 - a- Remove the connector on the fmp.
 - b- Place the **black** lead of the ohm meter to a good ground or the negative terminal of the battery.
 - c- Using the **red** lead of the ohm meter test the two fmp connector terminals and find the terminal with the result: 0.01 Ohm reading. This is **the wire leading to ground**.

WHAT IS THE COLOR OF THE OTHER WIRE?? This wire comes from the control unit and is the one that will be used by the High Altitude Compensating Device. **REMEMBER THIS COLOR!!**

- 3- Cut open the Fuel pump harness loom at a point close to the High Altitude Compensator 4-pin connector.
- 4- Look for the wire color that will be used by the High Altitude Compensating Device **remembered from above**. (Hint: The ground wire found in "2" above may have been a brown wire. Brown wires go to the battery ground terminal. **DO NOT CUT THE BROWN WIRE!**)
- 5- Find the female terminals and a 4-pin male connector block that came with the kit.

- 6- The wire going to the fuel metering pump from the heater control unit will have to be cut and a female terminal installed on the wire ends.
- 7- Place the male connector block against the mating block on the High Altitude Compensator.
- 8- The fuel pump wire end coming from the control box will have to be mated with the **GREEN** wire from the High Altitude Compensator.
- 9- The fuel pump wire going to the fuel pump will have to be mated with the **ORANGE** wire from the High Altitude Compensator.

Join the 4-pin connector blocks. Does the fuel pump harness wire from the control unit join with the **green** wire of the compensating device? Does the wire going to the fuel pump join with the **orange** wire? If YES continue. If NO make adjustments so that it is as required.

Turn the heater on. The heater will start and run normally. The High Altitude Compensator will adjust fuel pump rate automatically as the vehicle travels into higher altitudes and also going back into lower levels. A green LED on the device will flash for every pulse sent to the pump.

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To use **ãæ } [• çÁ [|** do the following:

- 1- Completely unplug the Pã @Öçã â^ÁÖ [] ^} • æ [; disconnecting the 4-pin and 6-pin connectors.
- 2- Connect/jumper a wire between pins 1 and 4 (4-pin connector) and connect the **ãæ } [• çÁ [|** in the diagnostic port (6-pin connector)
- 3- Ö [Áãæ } [• ç normally. Normal fuel rates to the fuel pump have been re-established automatically.
- 4- When done with the **ãæ } [• çÁ [|** unplug **ãæ } [ç^Á {] ^!Á á^Áæ á^Á& } } ^&c the High Altitude Compensator.**

Please see wiring installation located on the last page of this manual.

Installation Wiring for the High Altitude Compensator:

